

PENDING CLAIMS

1. (*previously presented*) A non-trifluoromethane-containing cover gas composition adapted for the protection of molten magnesium/magnesium alloy, the composition including up to less than 1% by volume of a fluorine containing inhibiting agent, and a carrier gas, wherein each
5 component of the composition has a Global Warming Potential (GWP) (referenced to the absolute GWP for carbon dioxide at a time horizon of 100 years) of less than 5000.
2. (*original*) A composition as claimed in claim 1 wherein the inhibiting agent has no ozone depletion potential.
3. (*previously presented*) A composition as claimed in claim 1 wherein the carrier gas is selected from the group consisting of air, carbon dioxide, argon, nitrogen and mixtures thereof.
4. (*previously presented*) A composition as claimed in claim 1, wherein each component of the composition has GWP of less than 3000.

5. *(previously presented)* A non-trifluoromethane-containing cover gas composition adapted for the protection of molten magnesium/magnesium alloy, the composition including up to less than 1% by volume of a fluorine containing inhibiting agent selected from the group consisting of

5 hydrofluorocarbons, hydrofluoroethers and mixtures thereof, and a carrier gas, wherein each component of the composition has a Global Warming Potential (GWP) (referenced to the absolute GWP for carbon dioxide at a time horizon of 100 years) of less than 5000.

6. *(previously presented)* A composition as claimed in claim 1 wherein the inhibiting agent has a boiling point of less than 100°C.

7. *(previously presented)* A composition as claimed in claim 1 wherein the inhibiting agent is selected from the group consisting of difluoromethane, pentafluoroethane, 1, 1, 1, 2-tetrafluoroethane, difluoroethane, heptafluoropropane, methoxy-nonafluorobutane, ethoxy-nonafluorobutane, dihydrodecafluoropentane and

5 mixtures thereof.

8. *(previously presented)* A composition as claimed in claim 4 wherein each component of the composition has a GWP of less than 1500.

9. *(previously presented)* A composition as claimed in claim 7 wherein the inhibiting agent is 1, 1, 1, 2-tetrafluoroethane and the carrier gas is dry air.

10. *(previously presented)* A cover gas composition adapted for the protection of molten magnesium/magnesium alloy, the composition including a fluorine containing inhibiting agent selected from the group consisting of difluoromethane, pentafluoroethane, 1,1,1,2-tetrafluoroethane, 5 difluoroethane, heptafluoropropane, methoxy-nonafluorobutane, ethoxy-nonafluorobutane, dihydrodecafluoropentane and mixtures thereof, wherein said inhibiting agent is up to less than 1% by volume of the composition, and a carrier gas, wherein each component of the composition has a Global Warming Potential (GWP) (referenced to the absolute GWP for carbon dioxide at a time 10 horizon of 100 years) of less than 5000.

11. *(previously presented)* A composition as claimed in claim 10 containing up to less than 0.5% by volume inhibiting agent.

12. *(previously presented)* A composition as claimed in claim 11 containing up to less than 0.1% by volume inhibiting agent.

13. - 32. *(cancelled)*

33. (*previously presented*) A composition as claimed in claim 7, wherein the inhibiting agent is 1, 1, 1, 2-tetrafluoroethane and the carrier gas is selected from the group consisting of nitrogen, carbon dioxide and mixtures thereof.

34. (*previously presented*) A method of protecting molten magnesium/magnesium alloy, comprising blanketing the magnesium/magnesium alloy with a non-trifluoromethane-containing cover gas composition containing up to less than 1% by volume of a fluorine containing
5 inhibiting agent, and a carrier gas, wherein each component of the composition has a Global Warming Potential (GWP) (referenced to the absolute GWP for carbon dioxide at a time horizon of 100 years) of less than 5000.

35. (*previously presented*) A method as claimed in claim 34, wherein the fluorine containing inhibiting agent is selected from the group consisting of hydrofluorocarbons, hydrofluoroethers, and mixtures thereof.

36. (*previously presented*) A method as claimed in claim 34, wherein the inhibiting agent is selected from the group consisting of difluoromehtane, pentafluoroethane, 1,1,1,2-tetrafluoroethane, difluoroethane, heptafluoropropane, methoxy-nonafluorobutane, ethoxy-nonafluorobutane, dihydrodecafluoropentane
5 and mixtures thereof.

37. *(previously presented)* A method as claimed in claim 36, wherein the fluorine containing inhibiting agent is a hydrofluorocarbon.

38. *(previously presented)* A method as claimed in claim 37, wherein said hydrofluorocarbon is selected from the group consisting of difluoromethane, pentafluoroethane, 1,1,1,2-tetrafluoroethane, difluoroethane, heptafluoropropane, dihydrodecafluoropentane and mixtures thereof.

39. *(previously presented)* A method as claimed in claim 37, wherein said hydrofluorocarbon is 1, 1, 1, 2-tetrafluoroethane.

40. *(previously presented)* A method as claimed in claim 36, wherein said fluorine containing inhibiting agent is a hydrofluoroether.

41. *(previously presented)* A method as claimed in claim 40, wherein said hydrofluoroether is selected from the group consisting of methoxynonafluorobutane, ethoxynonafluorobutane, and mixtures thereof.

42. *(previously presented)* A method as claimed in claim 36, wherein the gaseous mixture further comprises a carrier gas.

43. *(previously presented)* A method as claimed in claim 42, wherein said carrier gas is selected from the group consisting of air, CO₂, argon, nitrogen, and mixtures thereof.

44. *(previously presented)* A method for protecting an exposed surface of molten magnesium/magnesium alloy from reacting with oxygen in air, comprising:

- (a) providing molten magnesium/magnesium alloy;
- 5 (b) contacting said molten magnesium/magnesium alloy with a non-trifluoromethane-containing gaseous mixture comprising up to less than 1% by volume of a fluorine containing inhibiting agent selected from the group consisting of hydrofluorocarbons, hydrofluoroethers, and mixtures thereof; and
- 10 (c) forming a protective film/layer on the surface of said molten magnesium/magnesium alloy.

45. *(previously presented)* A method as claimed in claim 44, wherein the gaseous mixture further comprises a carrier gas.

46. *(previously presented)* A method as claimed in claim 45, wherein said carrier gas is selected from the group consisting of air, CO₂, argon, nitrogen, and mixtures thereof.

47. *(previously presented)* A method as claimed in claim 44, wherein the fluorine containing inhibiting agent is a hydrofluorocarbon.

48. *(previously presented)* A method as claimed in claim 47, wherein said hydrofluorocarbon is selected from the group consisting of difluoromethane, pentafluoroethane, 1,1,1,2-tetrafluoroethane, difluoroethane, heptafluoropropane, dihydrodecafluoropentane and mixtures thereof.

49. *(previously presented)* A method as claimed in claim 47, wherein said hydrofluorocarbon is 1, 1, 1, 2-tetrafluoroethane.

50. *(previously presented)* A method as claimed in claim 47, wherein said fluorine containing inhibiting agent is a hydrofluoroether.

51. *(previously presented)* A method as claimed in claim 44, wherein said hydrofluoroether is selected from the group consisting of methoxynonafluorobutane, ethoxynonafluorobutane, and mixtures thereof.